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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF AGRICULTURAL ENGINEERING

S. H. McCrory, Chief.

MONTHLY NEWS LETTER

WASHINGTON, D. C., MARCH 21, 1927.

RECENTLY WE WERE ADVISED BY THE OFFICE OF PURCHASE AND SALES THAT THE COMPTROLLER GENERAL REQUIRES THAT THERE BE FILED IN HIS OFFICE, COPIES OF AGREEMENTS RELATING TO LEASES. HERETOFORE, WE HAVE NOT APPLIED THIS TO RENTALS OF GARAGES AND OTHER SPACES. HEREAFTER, HOWEVER, INSTEAD OF MAKING VERBAL AGREEMENTS FOR GARAGE RENTALS, IT WILL BE NECESSARY TO EXECUTE AN AGREEMENT IN WRITING AND FORWARD A COPY HERE FOR TRANSMITTAL TO THE COMPTROLLER GENERAL. THIS DOES NOT NEED TO BE IN ANY PARTICULAR FORM, SIMPLY A WRITTEN, SIGNED STATEMENT OF THE TERMS AGREED UPON. LEASES FOR OFFICE SPACE SHOULD BE COVERED BY THE REGULAR FORM WHICH WILL BE FURNISHED ON REQUEST.

THE ADVISORY COUNCIL OF THE COLLEGE DIVISION OF THE A.S.A.E. HAD THEIR ANNUAL MEETING HERE ON MARCH 7-9. THE MEETING IN WASHINGTON WAS A CONTINUATION OF THE PRACTICE THAT HAS BEEN IN VOGUE FOR THE LAST FIVE OR SIX YEARS., MR. McCRORY AND PROFESSOR WALKER LEFT WASHINGTON ON MARCH 9 TO ATTEND A MEETING AT CHICAGO OF THE SECRETARY'S ADVISORY COUNCIL SET UP IN CONNECTION WITH THE MECHANICAL FARM EQUIPMENT RESEARCH SURVEY. PROFESSOR WALKER OF KANSAS STATE COLLEGE OF AGRICULTURE HAS BEEN APPOINTED AS DIRECTOR OF THE SURVEY FOR THE CURRENT YEAR, SUCCEEDING PROFESSOR J. B. DAVIDSON OF IOWA STATE COLLEGE. PROFESSOR DAVIDSON MADE AN EXTENSIVE SURVEY OF RESEARCH NOW IN PROGRESS IN THE FIELD OF MECHANICAL FARM EQUIPMENT AND LISTED SEVERAL HUNDRED PROJECTS THAT URGENTLY NEED ATTENTION. PROFESSOR WALKER WILL DEVOTE A LARGE PART OF HIS TIME TO INTERESTING THE COLLEGES AND EXPERIMENT STATIONS IN INAUGURATING RESEARCH ON THE MOST IMPORTANT TOPICS LISTED BY PROFESSOR DAVIDSON. THE CHICAGO MEETING WAS CALLED AT THE REQUEST OF PROFESSOR WALKER TO SECURE APPROVAL OF THE ADVISORY COUNCIL ON HIS GENERAL PROGRAM OF PROCEDURE.

L.A. JONES VISITED THE STATES OF ALABAMA, MISSISSIPPI, TEXAS AND OKLAHOMA AND SPENT CONSIDERABLE TIME WITH THE STATE EXTENSION AGENTS AND AGRICULTURAL ENGINEERS OBSERVING METHODS IN WHICH TERRACING PROJECTS IN EACH OF THE STATES WAS BEING CONDUCTED. HE FOUND THAT THE TERRACES CONSTRUCTED IN TEXAS AND OKLAHOMA ARE, AS A RULE, LARGER THAN THOSE CONSTRUCTED IN THE EASTERN PART OF THE UNITED STATES AND THAT THE FARMERS FOLLOW THE PRACTICE QUITE EXTENSIVELY OF RUNNING THE TERRACES DIRECTLY ACROSS GULLIES AND DOING CONSIDERABLE GRADING WORK WHERE THE TERRACES CROSS THE GULLIES. AT THE PRESENT TIME TERRACING IS THE MAJOR PROJECT IN EXTENSION WORK OF THE AGRICULTURAL ENGINEERING DEPARTMENT OF EACH OF THE STATES VISITED. IN TEXAS APPROXIMATELY 50 PER CENT AND IN OKLAHOMA 90 PER CENT OF THE TIME OF EXTENSION ENGINEERS IS SPENT ON SUCH WORK. EACH OF THE STATES VISITED TERRACED MORE THAN 100,000 ACRES OF LAND DURING THE CALENDAR YEAR 1926, AND TEXAS TERRACED OVER 500,000 ACRES.

A E L 22.

DURING THE PAST SEASON L. M. WINSOR HAS BEEN STUDYING THE SUBJECT OF PUMPING FOR IRRIGATION IN MANY OF THE WESTERN STATES. FARMERS IN THE SEMI-HUMID AND MANY OF THE HUMID AREAS OF THE WEST HAVE FOUND THAT A WATER SUPPLY FOR IRRIGATION DURING THE DRY SEASON IS THE BEST FORM OF INSURANCE THEY CAN CARRY. MANY WHO ONCE THOUGHT THEIR FARMS WOULD NEVER RESPOND FAVORABLY TO IRRIGATION HAVE FOUND THAT INCREASED RETURNS DURING A SINGLE DRY SEASON HAVE AMPLY PAID FOR THE INSTALLATION OF PUMPING PLANTS. THE INITIAL EXPENSE OF OPERATION IS NOT THE LIMITING FACTOR IN MEASURING RETURNS FROM A PUMPING PLANT. FOR EXAMPLE, WATER USED IN ONE LOCALITY FROM A PUMP WITH LIFT OF MORE THAN 300 FEET BRINGS GREATER RETURNS THAN IN ANOTHER LOCALITY WHERE THE LIFT IS ONLY 50 FEET; BEING USED IN THE FIRST CASE ON AN INTENSIVE CROP SUCH AS FRUIT OR GARDEN TRUCK AND IN THE SECOND ON A CROP WHICH HAS A LOWER UNIT VALUE AND THEREFORE BRINGS COMPARATIVELY LOW RETURNS PER UNIT VOLUME OF WATER PUMPED. THERE APPEARS TO BE WIDESPREAD OPPORTUNITY TO STUDY THE PROBLEM IN RELATION TO ITS APPLICATION IN FURNISHING MOISTURE TO LANDS WHICH HAVE ONLY A PARTIAL WATER RIGHT FROM GRAVITY STREAMS AND ALSO TO LANDS WHICH HAVE AN UNCERTAIN OR INTERMITTENT SUPPLY FROM RAINFALL. MR. WINSOR FEELS THAT PUMPING WILL BE ONE OF THE MOST IMPORTANT FACTORS IN FUTURE DEVELOPMENT OF THE WEST, NOT ONLY IN FURNISHING WATER FOR IRRIGATION, BUT ALSO IN CONTROLLING THE WATER TABLE.

W. W. McLAUGHLIN VISITED SOUTHERN CALIFORNIA, ARIZONA, AND NEW MEXICO DURING THE PAST MONTH, PRIMARILY IN CONNECTION WITH THE COOPERATIVE WORK OF THE DIVISION.

G. E. RAMSER HAS COMPLETED A PAPER ON "EROSION AND SILTING OF DREDGED DRAINAGE DITCHES" FOR PUBLICATION IN THE PROCEEDINGS OF THE IOWA ENGINEERING SOCIETY.

MR. RAMSER REPORTS THAT HE HAS SECURED EXCELLENT RUN-OFF DATA ON THE LITTLE RIVER FLOODWAY AND WILL SOON HAVE MEASUREMENTS FOR THE DETERMINATION OF n FOR DEPTHS OF FLOW RANGING FROM 4 TO 10 FEET. THE SLOPE MEASUREMENTS SHOW A GRADUAL FALL FROM THE HIGHEST TO THE LOWEST STAGE SO FAR MEASURED, THE FALL VARYING FROM ABOUT 0.95 TO 0.8 ALONG A COURSE OF 8,000 FEET.

F. F. SHAFER REPORTS THAT MOST OF THE DRAINAGE DISTRICTS ON WHICH HE IS KEEPING RECORDS ARE STILL FLOODED AS THE RESULT OF THE BREAKS IN LEVEES CAUSED BY THE JANUARY FLOOD. IN SOME CASES IT WILL PROBABLY BE IMPOSSIBLE TO UNWATER THE DISTRICTS IN TIME TO PLANT SPRING CROPS. THE DAMAGE IN ONE DISTRICT IS ESTIMATED AT \$300,000 NOT INCLUDING DAMAGE TO LEVEES AND PUMPING PLANT OR THE POSSIBLE LOSS OF THIS YEAR'S CROP.

HARVEY L. GOODELL HAS BEEN GIVEN A TEMPORARY APPOINTMENT TO ASSIST MR. F. F. SHAFER ON HIS INVESTIGATIONS OF THE COMPARATIVE COSTS OF PUMPING BY DIFFERENT TYPES OF POWER IN THE UPPER MISSISSIPPI VALLEY.

B. S. CLAYTON HAS COMPUTED THE RUN-OFF FOR THE DRAINAGE AREA UNDER OBSERVATION AT HEAD, MISS., FOR THE STORM OF NOVEMBER AND DECEMBER, 1925, WITH THE FOLLOWING RESULTS. THE MEAN RAINFALL OVER THE AREA FROM NOV. 4 TO 25, WAS 9.66 INCHES MAKING A TOTAL OF 238,537 ACRE-Feet. THE RUN-OFF AMOUNTED TO 121,980 ACRE-Feet SO THAT THE RUN-OFF EQUALED 51 PER CENT. THE CONDITIONS UNDER WHICH BOTH DISCHARGE AND RAINFALL WERE OBTAINED WERE EXCEPTIONALLY GOOD. OF THE TOTAL RAINFALL 6.4 INCHES FELL WITHIN A PERIOD OF 24 HOURS. A ONE-DAY RAIN ON DECEMBER 14 AMOUNTED TO 3.02 INCHES, PRODUCING A RUN-OFF OF 40 PER CENT. BEFORE EACH OF THESE STORMS THE SOIL OF THE AREA WAS MODERATELY MOIST.

MR. CLAYTON STATES THAT THE FIGURES SECURED FOR BOLIVAR COUNTY, MISS., SHOW A SMALLER PER CENT OF RUN-OFF THAN WAS SECURED BY MR. RAMSER 10 YEARS BEFORE. THERE WAS A LARGE AREA OF NEW LAND PUT INTO CULTIVATION DURING THIS INTERVAL WHICH DOUBTLESS ACCOUNTS FOR THE SMALLER RUN-OFF.

MR. CLAYTON REPORTED THAT A DRAINAGE CONFERENCE WAS HELD IN MEMPHIS IN FEBRUARY, HAVING FOR ITS OBJECT THE SECURING OF FEDERAL AID IN RE-FINANCING EXISTING DRAINAGE DISTRICTS AND ORGANIZING CUT-OVER LANDS INTO NEW DISTRICTS TO BE CONSTRUCTED BY THE RECLAMATION SERVICE.

D. L. YARNELL HAS PLANS PRACTICALLY COMPLETED FOR THE EXPERIMENT ON THE EFFECT OF PIERS ON THE FLOW OF WATER. WORK ON THE REPORT COVERING THE EXPERIMENTS ON THE FLOW OF WATER AROUND BENDS IS PROGRESSING, MR. YARNELL HAS COMPLETED THE MANUSCRIPT OF A REPORT ON CURRENT METERS.

A VERY COMPREHENSIVE REPORT ON "SILT IN THE COLORADO RIVER" BY SAMUEL FORTIER AND H. F. BLANEY HAS RECENTLY BEEN SUBMITTED TO THE WASHINGTON OFFICE FOR PUBLICATION AS A DEPARTMENT BULLETIN. THIS REPORT GIVES THE RESULTS OF COOPERATIVE EXPERIMENTS COVERING A PERIOD OF MORE THAN 10 YEARS.

DEPARTMENT BULLETIN 1456 ENTITLED "DRAINAGE BY MEANS OF PUMPING FROM WELLS IN SALT RIVER VALLEY, ARIZONA", BY J. C. MARR HAS BEEN ISSUED WITHIN THE PAST MONTH.

A. L. FELLOWS SPENT A LARGE PART OF THE MONTH AT AND NEAR KEARNEY, NEBRASKA, STUDYING PUMPING POSSIBILITIES.

L. T. JESSUP IS WORKING ON A REPORT ON DISCHARGE OF DRAINS ON IRRIGATED LANDS, INCLUDING DATA ESTIMATED TO COVER AN AREA OF OVER 1,000,000 ACRES HAVING ABOUT 3,000 MILES OF DRAINS. RECORDS WILL COVER MEASUREMENTS ON 350 OR MORE SEPARATE OUTLETS ON ABOUT 120 DIFFERENT DISTRICTS (AND ABOUT 15 SMALL FARMS OR EXPERIMENTAL TRACTS), IN 13 WESTERN STATES.

C. A. TAYLOR REPORTS THE RESULTS OF CHECKING THE SOIL TUBE METHOD OF DETERMINING VOLUME WEIGHTS, USING THE 2ND-3RD FOOT OF OCEANSIDE, CALIF., SOIL FOR THE TEST, AS IT HAS THE HIGHEST VOLUME WEIGHT OF ANY SOIL UNDER OBSERVATION IN THE COOPERATIVE WORK. SIX DETERMINATIONS WERE MADE WITH THE SOIL TUBE AND FOUR WITH A POST-HOLE AUGER. THE VOLUME OF THE POST-HOLE AUGER HOLE WAS DETERMINED BY FILLING THE HOLE WITH A MEASURED VOLUME OF THICK SYRUP. RESULTS WERE:

<u>SOIL TUBE</u>	<u>POST-HOLE AUGER</u>
1.87	
1.85	1.89
1.86	1.88
1.86	1.87
1.84	1.89
<u>1.82</u>	<u>Av. 1.88</u>
Av. 1.85	

R. L. PARSHALL STATES THAT DECEMBER SAW THE COMPLETION OF A DRAINAGE SYSTEM CONSISTING OF 38 MILES OF MAIN OUTLET AND LATERALS, WHICH IS ESTIMATED TO RELIEVE SEEPAGE CONDITIONS ON APPROXIMATELY 50,000 ACRES IN THE VICINITY OF MOSCA AND HOOPER, IN SAN LUIS VALLEY, COLORADO.

Mr. Clayton stated that the first of the three main points of the report was that the results of the investigation were in general in accordance with the findings of the previous investigation. He stated that the results of the investigation were in general in accordance with the findings of the previous investigation. He stated that the results of the investigation were in general in accordance with the findings of the previous investigation.

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Location	Area
1.2	1.2
1.3	1.3
1.4	1.4
1.5	1.5
1.6	1.6
1.7	1.7
1.8	1.8
1.9	1.9
2.0	2.0
2.1	2.1
2.2	2.2
2.3	2.3
2.4	2.4
2.5	2.5
2.6	2.6
2.7	2.7
2.8	2.8
2.9	2.9
3.0	3.0
3.1	3.1
3.2	3.2
3.3	3.3
3.4	3.4
3.5	3.5
3.6	3.6
3.7	3.7
3.8	3.8
3.9	3.9
4.0	4.0
4.1	4.1
4.2	4.2
4.3	4.3
4.4	4.4
4.5	4.5
4.6	4.6
4.7	4.7
4.8	4.8
4.9	4.9
5.0	5.0
5.1	5.1
5.2	5.2
5.3	5.3
5.4	5.4
5.5	5.5
5.6	5.6
5.7	5.7
5.8	5.8
5.9	5.9
6.0	6.0
6.1	6.1
6.2	6.2
6.3	6.3
6.4	6.4
6.5	6.5
6.6	6.6
6.7	6.7
6.8	6.8
6.9	6.9
7.0	7.0
7.1	7.1
7.2	7.2
7.3	7.3
7.4	7.4
7.5	7.5
7.6	7.6
7.7	7.7
7.8	7.8
7.9	7.9
8.0	8.0
8.1	8.1
8.2	8.2
8.3	8.3
8.4	8.4
8.5	8.5
8.6	8.6
8.7	8.7
8.8	8.8
8.9	8.9
9.0	9.0
9.1	9.1
9.2	9.2
9.3	9.3
9.4	9.4
9.5	9.5
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9.8	9.8
9.9	9.9
10.0	10.0

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DURING THE PAST MONTH M.C.BETTS ATTENDED A MEETING OF THE NATIONAL FIRE PROTECTIVE ASS'N AT COLUMBUS, OHIO. MR. BETTS ALSO MADE A TRIP TO MAINE IN THE INTEREST OF THE POTATO STORAGE INVESTIGATION. ONE PURPOSE OF THE TRIP WAS TO INDUCE A POTATO GROWER TO CONSTRUCT A POTATO STORAGE HOUSE IN ACCORDANCE WITH PLANS PREPARED IN THIS DIVISION AND IT IS EXPECTED THAT A HOUSE WILL BE BUILT AT LEAST CLOSELY APPROACHING THAT DESIGNED BY THE DIVISION.

R. B. GRAY HAS JUST COMPLETED THE REMODELLING AND TESTING OUT OF A FOUR-ROW BEET DRILL WITH FERTILIZER ATTACHMENT. BY USING TWO SETS OF SPOUTS, ONE SET FOR FERTILIZER AND ONE SET FOR SEED, THE FERTILIZER AND SEED CANNOT COME IN CONTACT AND THE FERTILIZER IS DEPOSITED ABOUT AN INCH BELOW THE SEED AND MIXED WITH THE SOIL WITH SHORT CHAINS ATTACHED TO THE FORWARD EDGE OF THE PIPE TERMINATING THE FERTILIZER SPOUT. THE SEED IS DEPOSITED ABOUT $3/4$ OF AN INCH BELOW THE SURFACE OF THE GROUND AND PACKED BY THE REGULAR PACKER WHEELS. THIS MACHINE, RECONSTRUCTED IN COOPERATION WITH THE SOIL FERTILITY DIVISION, BUREAU OF PLANT INDUSTRY, IS TO BE USED BY THEM IN THE SUGAR BEET AREA OF THE WEST WHERE IT HAS BEEN FOUND THAT SOWING THE SEED AND FERTILIZER IN THE SAME SPOUT IS DETRIMENTAL TO GERMINATION AND CONSEQUENT CROP YIELD.

MR. GRAY WILL ENTER ACTIVELY INTO THE CAMPAIGN FOR THE CONTROL OF THE CORN BORER IN THE CENTRAL STATES AND FOR THAT PURPOSE HAS BEEN LOANED TO THE BUREAU OF ENTOMOLOGY. HE WILL BE IN THE FIELD IN CONNECTION WITH THIS PROJECT DURING THE NEXT TWO OR THREE MONTHS.

T.A.H. MILLER HAS RECENTLY EXAMINED THE SITE FOR A PROPOSED GRANARY TO BE ERECTED AT MARTINSBURG, W. VA., FOR A GROUP OF FARMERS. PLANS ARE BEING PREPARED BY THE DIVISION FOR THIS STRUCTURE AND THE FOUNDATION HAS ALREADY BEEN STARTED.

FOR THE PAST SEVERAL MONTHS A.H. SENNER HAS BEEN CONDUCTING TESTS OF OIL BURNERS AT JOHNS HOPKINS UNIVERSITY, BALTIMORE, IN COOPERATION WITH THE UNIVERSITY TO SUPPLEMENT THE TESTS WHICH WERE CARRIED ON AT ARLINGTON FARM. DATA HAVE BEEN SECURED FROM THESE TESTS WHICH ARE OF FUNDAMENTAL IMPORTANCE WITH REGARD TO THE COMBUSTION OF OIL IN THE PROXIMITY OF WATER-COOLED SURFACES.

J. NEWTON BAKER HAS BEEN APPOINTED ON A TEMPORARY BASIS AS DRAFTSMAN IN WASHINGTON.

JOHN G. SUTTON, AFTER HAVING SPENT MORE THAN TWO MONTHS IN WASHINGTON WORKING UP THE RESULTS OF THE LAST SEVERAL YEARS OF SUGAR CANE DRAINAGE AND IRRIGATION IN LOUISIANA, HAS RETURNED TO FRANKLIN, LA., TO CLOSE UP THAT PROJECT FOR THE PRESENT. ECONOMIC CONDITIONS IN SOUTHERN LOUISIANA ARE SUCH THAT THE SUGAR CANE INVESTIGATIONS WILL NOT BE CARRIED ON DURING THE CURRENT SEASON ALTHOUGH THEY MAY BE RESUMED NEXT YEAR. MR. SUTTON WILL REPORT TO MR. RAMSER AT CAPE GIRARDEAU AND THEN PROCEED TO FORT WAYNE, IND., TO BEGIN RUN-OFF INVESTIGATIONS IN THAT TERRITORY SIMILAR TO THOSE WE HAVE BEEN CARRYING ON DURING THE LAST FEW YEARS IN ILLINOIS, MISSOURI, AND ARKANSAS.

G. R. BOYD HAS BEEN LOANED TO THE BUREAU OF RECLAMATION FOR A PERIOD THAT PROBABLY WILL EXTEND TO JULY 1, FOR THE PURPOSE OF MAKING PRELIMINARY DRAINAGE AND LANDCLEARING INVESTIGATIONS AND REPORTS ON A NUMBER OF LAND SETTLEMENT PROJECTS IN THE SOUTHERN STATES. CONGRESS RECENTLY AUTHORIZED THE BUREAU OF RECLAMATION TO MAKE PRELIMINARY INVESTIGATIONS OF A NUMBER OF SUCH PROJECTS, MOST OF WHICH WILL INVOLVE DRAINAGE AND LANDCLEARING.

